

NEW SPECIES OF TENEBRIONIDAE FROM WESTERN  
NORTH AMERICA (COLEOPTERA)

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The species dealt with here belong to obscure genera which are rarely encountered except by specialists, and are seldom mentioned in the literature. The new species of *Adelonia* and *Triphalopsis* represent significant range extensions for the genera. The *Chilometopon* exhibits characters unusual for the genus, suggesting possible relationships with the tribe Thino-batini of southern South America.

Observations were made with Leitz and Wild stereomicroscopes and an American Optical compound scope. Genitalia were mounted on glycerine jelly slides and drawn with an optical grid. The excellent illustrations of beetles were executed by Carolyn Mullinex. The California Academy of Sciences (D. Kavanaugh), San Francisco, and the American Museum of Natural History (L. H. Herman), New York, and K. W. Brown, Stockton, California, kindly loaned some of the specimens.

***Chilometopon brachystomum*, new species**  
(Fig. 1)

Form ovate, elytra slightly inflated, brachypterous; uniformly castaneous, feebly shining, in life faintly obscured by thin deposit of powdery white wax. Cuticle thin, fragile.

Head about as long as wide, broadest across eyes, slightly narrower across epistoma just above antennae; epistoma impressed laterally between epistomal sutures and supraorbital carinae; slightly emarginate on each side just mesad of epistomal suture, then abruptly projecting anterad about  $\frac{1}{10}$  head width, truncate anteriorly; epistomal suture distinct laterally, obsolete medially; supraorbital carina distinct above eye, fading anteriorly and not reaching margin of head; dorsal cranial surface set with shallow punctures, separated by about one puncture diameter on vertex, becoming denser and anastomosing into fine, irregular, longitudinal ridges between eyes, and becoming contiguous along epistomal margin. Eyes slightly ovoid, bulging, barely indented by epistomal canthus. Mentum hexagonal, twice as wide as long, shallowly emarginate anteriorly. Antennae slender, long, reaching well beyond base of pronotum; ratio of segment lengths (base to apex) 11:9:16:9:8:7:7:6:6:5:8; basal 7 segments slightly serrate, becoming gradually broad-

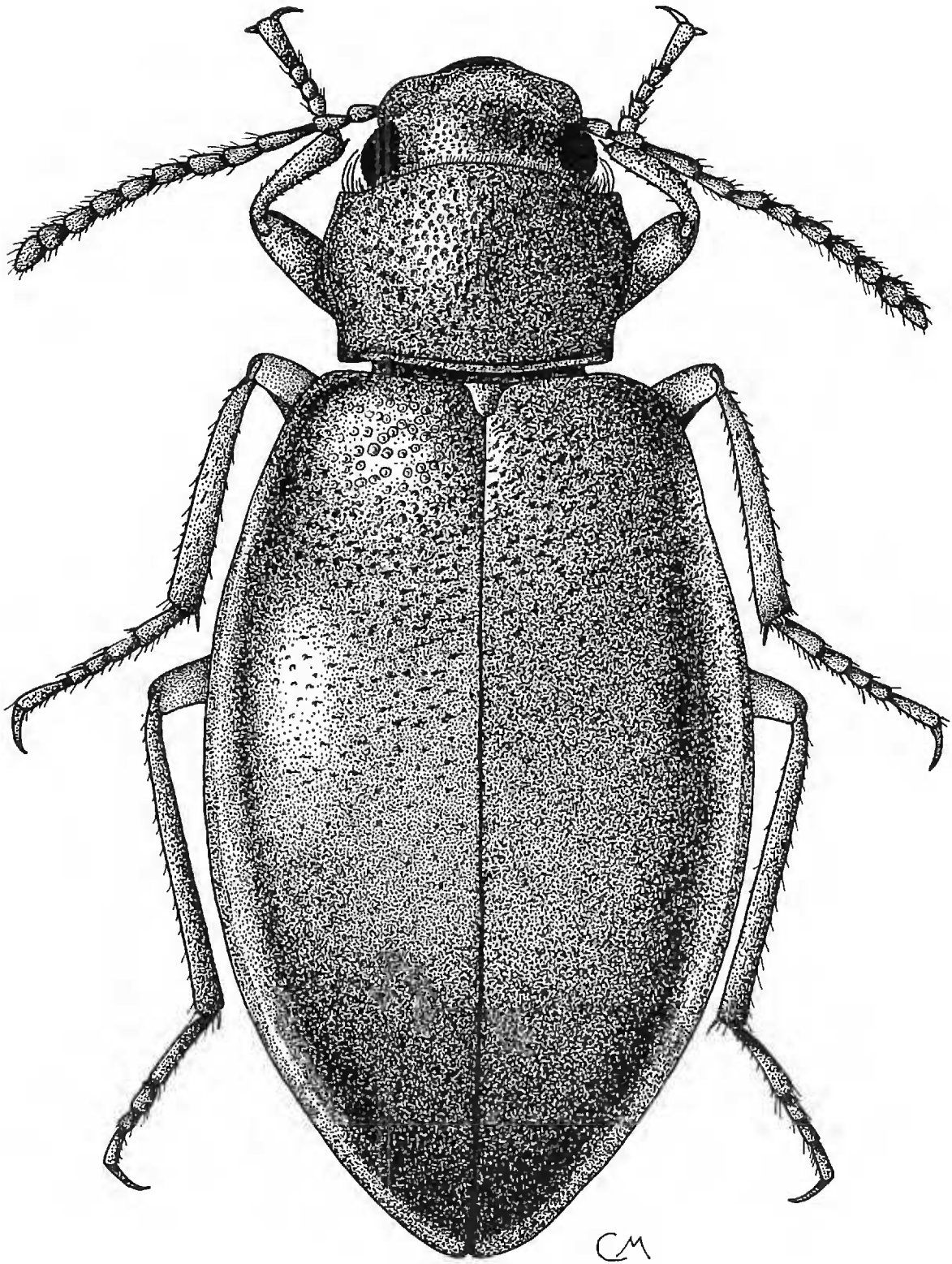


Fig. 1. *Chilometopon brachystomum* female.

er; apical 4 segments sub-moniliform; 9th and 10th segments about as wide as long; 11th 1.5 times longer than wide.

Pronotum subrectangular, broadest near middle; anterior and posterior widths subequal, slightly broader than head, anterior margin slightly raised except medially; anterior angles nearly 90°, slightly projecting with tuft of about 6–8 yellow setae reaching to middle of eye; lateral margins sharp, slightly raised, evenly arcuate almost to base, becoming straight just before



sharp, 90° posterior angles; posterior margin weakly bisinuate, slightly raised, especially medially. Pronotal disk shallowly punctate; punctures about as large as eye facet, separated by about one puncture diameter medially, becoming contiguous and coarser on lateral thirds. Hypomera and prosternum set with shallow, coarse, nearly contiguous punctures. Prosternal process about  $\frac{1}{3}$  coxa width, abruptly declivous posteriorly.

Elytral width across humeri about 1.25 times width of pronotal base, widest slightly behind middle, apices pointed; disk estriate, irregularly set with shallow punctures about as large as eye facet and separated by about one puncture diameter centrally, becoming smaller and sparser posteriorly. Epipleura nearly glabrous, complete, with sharply raised margins; widest at humerus, gradually narrowing to apex. Metathoracic wings reduced, about  $\frac{2}{5}$  length of elytra.

Mesosternum planar, not excavated between coxae, set with coarse, contiguous setigerous punctures; mesepisterna set with very coarse, contiguous punctures; mesepimera glabrous or with a few, nearly obsolete punctures. Metasternum and metepimera set with setigerous punctures separated by about one puncture diameter. Abdominal sternites glabrous except for few, obsolescent punctures near anterior margin of 1st sternite and fine sparse, yellow, appressed setae, these becoming denser on 5th sternite. Abdominal sternite length ratios (base to apex) about 33:30:25:15:18; intercoxal process triangular, apex rounded.

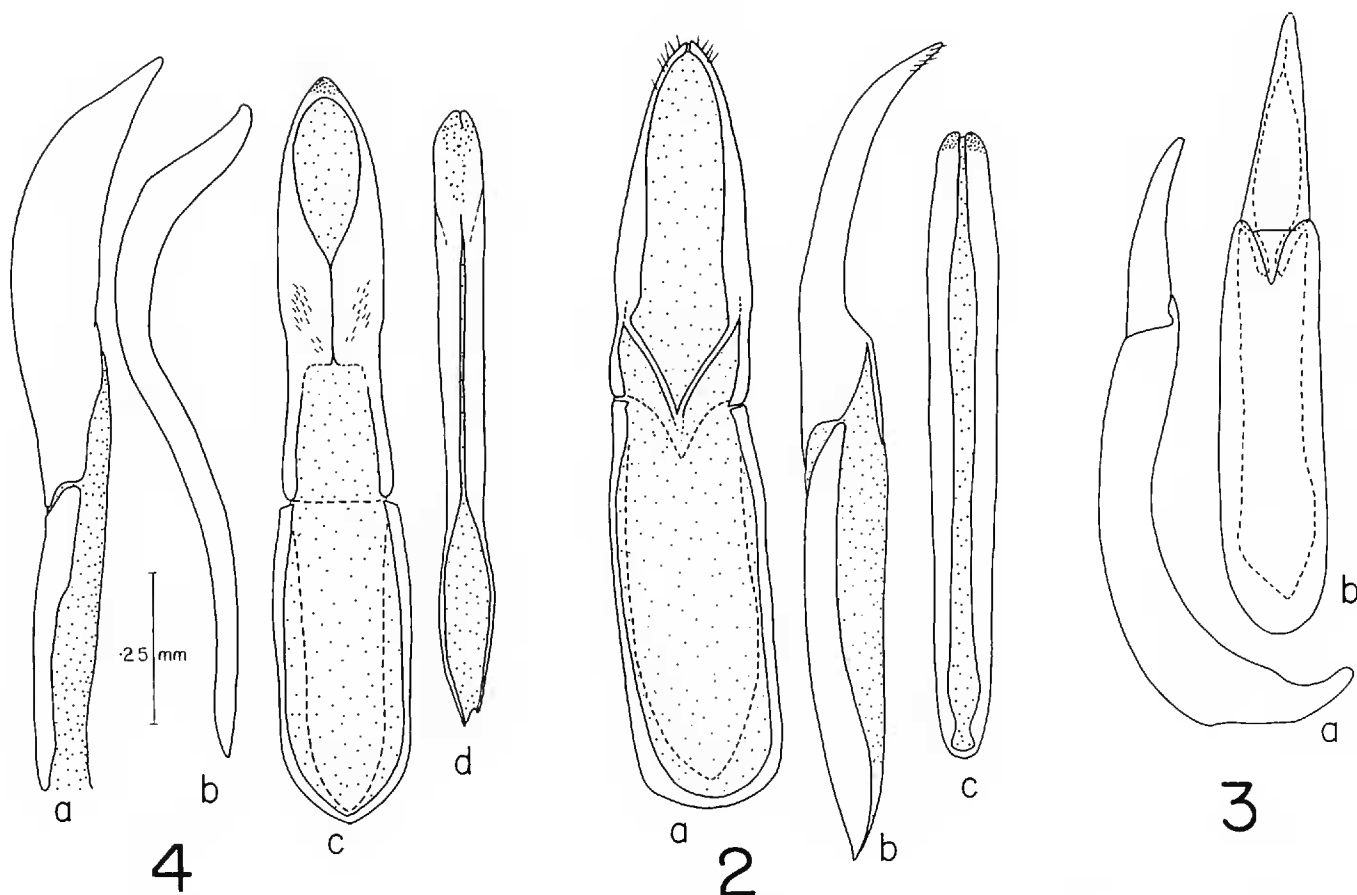
Legs slender; femora slightly clavate; sparsely clothed with appressed setae; tibia gradually enlarged apically, densely clothed with short, spinose setae; tibial spurs about as long as penultimate tarsomere; tarsomere length ratios as follows: fore tarsus 10:8:8:7:12; middle tarsus 12:7:7:5:13; hind tarsus 20:9:7:16. Tarsal claws slender, about as long as 2nd hind tarsomere.

Aedeagus (Fig. 2) with tegmen inverted; median lobe sclerotized ventrally, membranous dorsally, simply upcurved with sparse, apical setae. Median lobe free, with linear, parallel baculi.

Body dimensions: elytral length 3.9–4.6 mm (♂♂), 4.6–5.2 mm (♀♀); pronotal length 1.0–1.1 mm (♂♂), 1.0–1.3 mm (♀♀); greatest elytral width 2.5–2.9 mm (♂♂), 2.8–3.6 mm (♀♀); greatest pronotal width 1.3–1.6 mm (♂♂), 1.5–1.7 mm (♀♀).

Holotype male and 24 male, 24 female paratypes from Mexico, Baja California del Norte, Bahia San Luis Gonzaga, April 3, 1973. J. Doyen, J. Powell and S. L. Szerlip. The holotype is deposited in the California Academy of Sciences, San Francisco. Paratypes are in the Essig Museum of Entomology, University of California, Berkeley.

The beetles were collected at night on the surface of low, coastal dunes and sand hummocks no more than a few meters above sea level. Other species of *Chilometopon* are active during the hottest months of the year, when they commonly aggregate at night on flowers of *Petalonyx* and other



Figs. 2–4. Male genitalia. Fig. 2. *Chilometopon brachystomum*, dorsal aspect of aedeagus (a), lateral aspect (b), dorsal aspect of median lobe (c). Fig. 3. *Adelonia insularis*, lateral (a) and dorsal (b) aspects of aedeagus. Fig. 4. *Triphalopsis californicus*, lateral (a, b) and ventral (c, d) aspects of aedeagus and median lobe.

summer-blooming plants. The name *brachystomum* refers to the epistomum, which is shorter than in other species of *Chilometopon*.

*Discussion.*—*Chilometopon brachystomum* is distinguished from other North American Trimytini by the very short medial epistomal lobe. In other Trimytini the medial lobe is at least as long as the labrum. According to the characters used by Casey (1907) to characterize the genera of Trimytini, *C. brachystomum* would establish a distinct genus. However, in all features except the size of the epistoma, it is exceedingly similar to other species of *Chilometopon*. Moreover, the size and shape of the epistomal lobe is variable. In *C. abnorme* Horn, *C. castaneum* Casey and *C. ensifer* Casey the medial lobe is about as long as the labrum and apically rounded. In *C. pallidum* the medial lobe is shorter than the labrum and apically truncate, as in *Prometopion*. The apical antennal segment of *C. brachystomum* is unmodified in males. In this feature *brachystomum* is most similar to *C. pallidum* Casey, in which the apical segment is only slightly elongate in males. No other described species of *Chilometopon* are brachypterous. Clearly, the short winged condition in *C. brachystomum* is of relatively recent origin, since the wings are only slightly reduced in size and still show

distinct anterior venation. The metanotum is essentially unmodified in structure.

Blaisdell (1943) recorded three similar species of *Chilometopon* from Baja California, namely *C. castaneum* Casey, *C. rugiceps* Blaisdell and *C. cribricolle* Blaisdell. In all these species the medial epistomal lobe is at least as long as the labium, and arcuate or arcuato-truncate anteriorly. In males of these three the apical antennal segment is at least as long as the preceding 3 segments combined. The tribe Trimytini is presently under study by Mr. William MacLachlan, University of Arizona. Consequently, no key to species is provided here.

In general appearance *C. brachystomum* resembles closely *Thinobatis* Eschscholtz, with which it shares the abbreviated epistoma, very similar aedeagus, metendosternite, tentorium and mouthparts. *Thinobatis* is apterous, differing from *Chilometopon* in associated thoracic features, has the eyes entire anteriorly (very weakly emarginate in *Chilometopon*) and has a distinct tooth on the middle of the dorso-lateral ridge of the mandible. The middle tooth is not developed in *Chilometopon*, but similar teeth are present on both mandibles of *Trimytis*. The dorsal surface of the mandibles of *Pro-metopion* are thickened and coarsely sculptured, as in *Trimytis*, but lack distinct teeth. Lacordaire (1859) distinguished his *Thinobatides* from *Tribolocarides* (=Trimytini) primarily by the structure of the epistoma—relatively short and broad in *Thinobatini*; trilobed and exposing the bases of the mandibles in the Trimytini. It is premature to suggest that *Thinobatini* and Trimytini are synonymous, but the character distributions described above indicate that the higher classification of these and related tribes needs to be critically reexamined.

#### ***Adelonia insularis*, new species**

Form elongate, flattened, winged; body uniformly brownish black, shining, with castaneous appendages.

Head subhexagonal in dorsal view, broadest across posterior margin of eyes, anterior epistomal margin evenly, shallowly emarginate, lateral epistomal margins nearly straight, then converging just before eyes; epistomal sutures distinct laterally, obscured medially; dorsal cranial surface uniformly set with shallow punctures slightly smaller than eye facet and separated by about one puncture diameter, becoming finer, more closely set along anterior epistomal margin. Eyes reniform, ventral lobe about twice as large as dorsal. Mentum subquadrate, about 1.5 times wider than long, lateral margins arcuate, slightly recurved, almost parallel just before base. Antennae clavate, reaching about  $\frac{3}{4}$  distance to pronotal base; ratio of segment lengths (base to apex) 10:5:8:6:6:5:7:7:7:7:10; segments 2–6 submoniliform, segments 7–11 about 1.4–1.5 times broader than long, asymmetrical and larger medially; segment 11 ovoid, 1.1 times longer than broad.



Prothorax subquadrate, 1.1 times broader than long, about 1.1 times wider across base than apex; anterior border shallowly, evenly emarginate with raised margin laterally; anterior angles nearly  $90^\circ$ , rounded; lateral margins slightly, evenly arcuate, with narrowly upturned, rounded margin; posterior angles slightly obtuse, slightly rounded at apex; posterior margin faintly bisinuate with narrow raised margin. Pronotal disk shallowly punctate; punctures about as large as eye facet, separated by 1–2 puncture diameters medially, becoming gradually contiguous and reticulate near lateral margins; shallow round foveae located near posterior margin about halfway from angles to midline, and 2nd pair usually near lateral margins about  $\frac{5}{9}$  distance to posterior angle; shallow transverse depression located in medial  $\frac{1}{4}$  near posterior margin. Hypomera scabrous except for smooth coxal cowlings; prosternum finely punctatorugose, becoming finely, sparsely punctate between coxae; prosternal process declivous behind coxa, truncate, finely, sparsely punctate.

Elytral width subequal to pronotal width at base, nearly parallel sided to third abdominal segment, 10 striae; striae set with rounded, posteriorly open, slightly transverse punctures separated by 1.5–2 times puncture diameter; puncture diameter on disk about 4 times that of pronotal punctures, decreasing to half this size on declivity; interstriae finely, sparsely punctate, obtusely rounded; 7th–9th interstriae weakly inflated in humeral region; epipleura strongly elevated, forming deep gutters with narrowly rounded margins; broadest basally, gradually narrowing to elytral apex; finely, sparsely and obscurely punctate.

Mesosternum shallowly concave before coxae, set with shallow punctures separated by about one puncture diameter and bearing short, declined setae; mesopleura coarsely punctatorugose; metasternum, metepisterna, and abdomen set with fine punctures separated by about 1 puncture diameter on metepisterna and sternite 5, by 2–3 diameters on metasternum and sternites 1–4; intercoxal process triangular, apically rounded.

Legs robust, femora inflated, tibiae slender, gradually enlarged to apex; mesofemoral tooth short, blunt, obtusely triangular; metafemoral tooth about as long as tibial width, right angled or slightly acute.

Aedeagus (Fig. 3) with tegmen dorsal, mostly membranous ventrally; median lobe adnate, not protrusible.

Body dimensions: elytral length 5.2–6.2 mm (♀♀), 5.1–6.0 mm (♂♂); pronotal length 1.7–2.0 mm (♀♀ and ♂♂); greatest elytral width 2.7–3.0 mm (♀♀), 2.6–3.1 mm (♂♂); greatest pronotal width 2.4–2.9 mm (♀♀), 2.3–2.8 mm (♂♂).

Holotype male and 20 male, 32 female, 14 unsexed paratypes from Mexico, Tres Marias Islands, Magdalena Island, May 20, 1925. H. H. Keifer. Holotype and 50 paratypes, California Academy of Sciences; 15 paratypes, Essig Museum of Entomology, University of California, Berkeley.

*Discussion.*—*Adelonia insularis* is similar to *A. sulcatula* (Champion), differing in the following features: in *insularis* the epistomal margin is shallowly, evenly emarginate; the pronotal disk is punctate medially, reticulately punctate laterally; the meso- and metapleura and sterna and abdomen are punctate; the mesofemoral tooth is very blunt and obtuse, the metafemoral tooth right angled. In *sulcatula* the epistomal margin is almost straight; the pronotal disk is reticulately punctate medially, rugulose laterally; the pleura, sterna and abdomen are set with squat, flattened tubercles, at least laterally; the femoral teeth are larger and usually more acute. In *Adelonia costipennis* (Blair) from the Galapagos Islands the mesofemora lack teeth and the metafemoral teeth are very obtusely dentate. *Adelonia filiformis* Laporte from southern Baja California, is only 5–6 mm long, has the pronotum evenly, sparsely punctate and has much smaller elytral punctures.

The collection of *Adelonia* made by Keifer contained 9 individuals of *sulcatula*, as well as the series of *insularis*. The specimens of *sulcatula* are not significantly different from populations of the same species from Mexico and Central America, suggesting a recent, probably historical, introduction onto the Tres Marias Islands.

#### Key to the Species of *Adelonia* Excluding South America

1. Mesofemora armed with distinct teeth on mesal surface ..... 2  
    Mesofemora without teeth ..... *costipennis* (Blair)
2. Pronotum, mesosternum, metasternum and abdomen punctate .... 3  
    Pronotum, mesosternum and metasternum punctate medially, tuberculate laterally ..... *sulcatula* (Champion)
3. Elytral interstriae convexly rounded ..... 4  
    Elytral interstriae flat ..... *quadricollis* (Champion)
4. Pronotal disk with punctures separated by about 1 puncture diameter, slightly closer laterally, but never reticulate; lateral margins without foveae ..... *filiformis* Laporte  
    Pronotal disk with punctures separated by less than 1 puncture diameter medially, becoming reticulately punctate laterally; lateral margins usually with distinct foveae near middle ... *insularis*, n. sp.

#### ***Triphalopsis californicus*, new species**

(Fig. 5)

Form ovate, elytra moderately inflated, apterous; color uniformly castaneous, feebly shining; dorsum sparsely clothed with slender, pale, erect hairs about as long as combined length of antennal segments 2 and 3.

Head slightly deflexed, about  $\frac{1}{5}$  wider than long, broadest across eyes; epistoma trilobed, with lateral lobes broadly, evenly rounded, separated from medial lobe by deep emarginations; medial epistomal lobe about 1.3



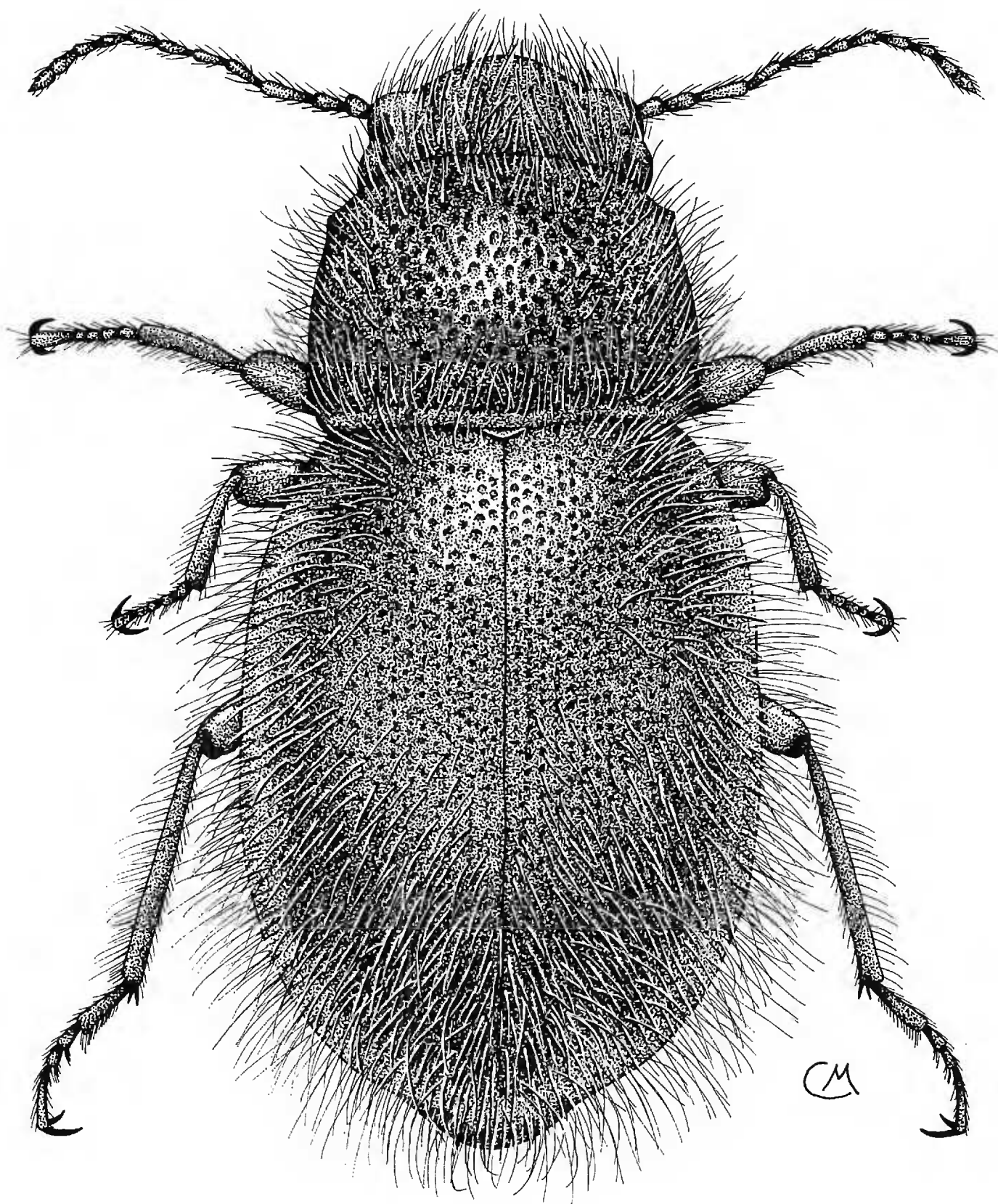


Fig. 5. *Triphalopsis californicus*, female.

times broader, about 4 times longer than lateral lobes, arcuately triangular with serrate margin; epistomal suture absent; low supraorbital carinae extending from middle of eyes almost to epistomal emarginations; dorsal cranial surface sparsely, finely punctate; vertex and frons carinulate, with ridges occasionally anastomosing, becoming obsolete medially just behind strigate



epistomal lobe; eyes slightly ovoid, indented about  $\frac{1}{3}$  by epistomal canthus. Mentum hexagonal, about twice as wide as long, punctatorugose; submentum invaginated anterodorsad as a shallow pocket above mentum; postgenal processes (Brown, 1971) prominent, acutely angulate. Antennae filiform, last 3 segments slightly enlarged; ratio of segment lengths (base to apex) 14:9:12:9:8:7:7:6:7:7:10.

Pronotum about 1.4 times wider than long, widest just behind middle; anterior border straight, unmargined, angles barely exerted; anterior angles sharp, almost  $90^\circ$ ; lateral borders narrowly, weakly margined, nearly straight anteriorly, arcuate behind middle; posterior angles obtuse, not rounded; posterior border convexly arcuate with broad, flat, finely punctate margin; base about 1.1 times wider than apex. Pronotal disk coarsely punctatorugulose, rugae predominantly longitudinal; punctures each set with single long seta. Hypomera and prosternum coarsely punctatorugulose; hypomeral punctures bearing short, procumbent setae; sternum with a few long, straight setae; prosternal process about  $\frac{1}{3}$  coxa width, declivous just behind coxae, then subhorizontal, apically truncate.

Elytra subequal in width at base to pronotal base; basal margin slightly raised; lateral margins evenly arcuate, widest at about middle; disk regularly set with deep, coarse punctures, each bearing single, long seta and separated by 1–2 puncture diameters. Epipleura faintly rugulose, set with a few short setae, widest at humerus, abruptly narrowed just behind acutely rounded humeral angles then gradually narrowing to elytral apices.

Thoracic pleura and sterna set with very large, deep, setigerous punctures; mesosternum barely excavated between coxae; metasternum about as long as mesocoxa; mesocoxae almost contiguous; metacoxae separated by about half mesocoxal diameter. Abdominal sternites set with deep setigerous punctures about half as large as those on metasternum, separated by 1–2 puncture diameters; setae reclined (about  $60^\circ$ ), about half as long as elytral setae. Abdominal sternite length ratios (base to apex) about 35:27:20:12:20; intercoxal process about half as wide as mesocoxa, apex broadly rounded.

Legs finely punctate, setose; femora slightly clavate, short, barely exceeding body margins; tibiae nearly cylindrical, gradually enlarged apically and bearing 2 rows of about 8–10 spines on outer surface, these shortest on fore tibiae; tibial spurs about as long as basal protarsomere; basal 4 tarsomeres with ventral tufts of stiff, yellow setae about as long as 4th protarsomere; tarsomere length ratios as follows: fore tarsus 5:4:3:3:13; middle tarsus 7:5:4:4:14; hind tarsus 12:7:5:15.

Aedeagus (Fig. 4) with tegmen inverted; apical piece curved dorsad; with auriculate sclerotized processes mid-dorsally; basal piece sclerotized laterally; median lobe free, sinuately curved; baculi nearly meeting along dorsal midline, fused apically.

Body dimensions: elytral length 3.8–4.9 mm; pronotal length 1.4–1.7 mm; greatest elytral width 2.9–3.4 mm; greatest pronotal width 2.1–2.6 mm.

Holotype male and 1 female paratype from California, Imperial County, 9 mi. W Coyote Wells, March 26, 1961, W. A. Steffan. Paratypes: California, Imperial County, Mountain Springs, el. 3400', March 27, 1979 (1 ♀, 1 ♂); San Diego County, .5 mi. W Yaqui Well, Cholla-Ocotillo, el. 1500', February 19–23, 1978, ethylene glycol can trap (4 ♂♂); San Diego County, Mountain Springs, nr. Desert View Tower, 1960 (1 ♂). Mexico, Baja California Norte, 6.2 mi. W Bahia de Los Angeles, July 11, 1979, pit trap (1 ♂, 2 ♀♀); 2 mi. N Arroyo Catavina, December 27, 1979 (1 ♀). Holotype, California Academy of Sciences, San Francisco. Paratype distribution: Essig Museum of Entomology, University of California, Berkeley (5); American Museum of Natural History, New York (1); California Department of Food and Agriculture Collection, Sacramento (2); collection of K. W. Brown (5); collection of R. Aalbu (2); University of California, Irvine (1).

*Discussion.*—*Triphalopsis californicus* is similar in size, body configuration and cuticular sculpturing to *T. partida* Blaisdell and *T. minor* Blaisdell. In *partida* and *minor* the long setae on the dorsum are deflexed at the tip; the setae of *californicus* are straight. In *partida* and *minor* the raised posterior border of the pronotum usually becomes much broader near the lateral angles, which are distinctly exserted and nearly 90°. In *californicus* the posterior pronotal border is slightly broadened at most and the angles are obtuse and slightly or not exserted. *Triphalopsis impressicollis* Blaisdell has straight, erect setae, as in *californicus*, but has the anterior prothoracic angles exserted and acute (nearly right angled, slightly or not at all prominent in *californicus*). In *impressicollis* the pronotal disk is distinctly impressed near the lateral margins and before the hind angles. In *californicus* the disk is evenly convex.

All four species of *Triphalopsis* have an obvious secondary sexual character which is widespread in Triorophini. On the first abdominal sternite of males is a small, dense, oval patch of pale recumbent setae. These setae are absent from females. Configuration of the patch and length of setae vary among other genera and species. In *Triorophus* the short, very dense, erect setae occupy a nearly circular area. In *Micromes* and *Eschatomoxys* the patch is oval or teardrop shaped and occupies a depression in the cuticle. In *Stibia* and *Triphalus* a small circular depression bears the setae.

*Triphalopsis* was omitted from Arnett (1960). The following changes in Arnett's key (p. 648) will separate *Triphalopsis* from similar genera:

- 4(3). Tarsi spinose or with sparse spiniform vestiture ventrally, not pubescent ..... 5 (*Oxygonodera*, *Micromes*, *Trichiotes*)  
 Tarsi with coarse, dense, pale setae at least as long as 4th pro-tarsomere on ventral surfaces ..... 7



- 7(4). Dorsum sparsely covered with slender, erect setae more than half  
as long as anterior tarsus ..... *Triphalopsis* Blaisdell  
Dorsum nearly glabrous or with much shorter, recumbent setae  
..... *Triphalus* LeConte

Key to the Species of *Triphalopsis*

1. Setae on dorsum with decurved tips ..... 2  
Setae on dorsum straight to apices ..... 3  
2. Pronotal disk coarsely rugosopunctate ..... *partida* Blaisdell  
Pronotal disk coarsely punctate with intervals flat .... *minor* Blaisdell  
3. Pronotal disk evenly convex; anterior angles right angled, slightly  
prominent at most ..... *californicus*, n. sp.  
Pronotal disk impressed near lateral margins and before posterior  
angles; anterior angles acute and prominently exerted .....  
..... *impressicollis* Blaisdell

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